



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BD

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,951	07/17/2003	Mark Allen Grubbs	AUS920030463US1	1546
7590	03/01/2006		EXAMINER	
Mr. Volel Emile P.O. Box 202170 Austin, TX 78720-2170			LU, CHARLES EDWARD	
			ART UNIT	PAPER NUMBER
			2163	
			DATE MAILED: 03/01/2006	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,951	GRUBBS ET AL.	
	Examiner Charles E. Lu	Art Unit 2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 17 July 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-20 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 17 July 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/17/2003

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .
5) Notice of Informal Patent Application (PTO-152)
6) Other: ____ .

DETAILED ACTION

1. Claims 1-20 have been submitted for examination.
2. Claims 1-20 have been rejected.

Drawings

3. The drawings are objected to because of the following informalities:

In fig. 11, reference numeral 1115 does not appear to be described in the specification.

In fig. 12, reference numerals 1205 and 1215 do not appear to be described in the specification.

In fig. 13, reference numeral 1315 does not appear to be described in the specification.

In fig. 15, reference numeral 1510 does not appear to be described in the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The specification is objected to because of the following informalities:

In page 8, line 25, the word "as" should be removed.

In page 14, lines 9, 15, and 29, the reference numerals 1125, 1225, and 1310 do not appear to be shown in the drawings.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 10 and 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 10 and 17, there is insufficient antecedent basis for the limitation "the mounted file system." The above will be interpreted as a mounted file system.

The broadest reasonable interpretation of the above terms in light of the specification has been given to the claims. Art rejection of the above claims is applied as best understood in light of the rejection under 35 U.S.C. 112, second paragraph, discussed above.

Claim Rejections - 35 USC § 103

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 8, 11, 13-15, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha (U.S. Patent 5,437,029) in view of Pinkoski (U.S. Patent 5,742,817).

As to claim 1, Sinha teaches the following claimed subject matter for a file system:

Determining a plurality of file system objects that are frequently being accessed (col. 7, ll. 40-42, col. 2, ll. 58-60), each file system object having a pathname and a node number (fig. 3, 4A, col. 7, ll. 58-64), the node number for locating the file system object on a storage system (col. 7, ll. 60-65);

Entering the pathname of each file system object into a memory system (see fig. 3, 4A, col. 7, ll. 47-52); and

Cross-referencing the pathname of each file system object in the memory system with its node number thereby enabling the node number to be obtained with one memory access (col. 7, ll. 47-52, 57-62, col. 2, ll. 57-66, fig. 3, 4A).

Sinha does not teach wherein the nodes are inodes.

However, Pinkoski describes a conventional file system wherein nodes are inodes (col. 1, ll. 10-60).

Since Sinha and Pinkoski are both drawn towards optimizing file system access, and the nodes of Sinha and inodes of Pinkoski both specify location information of a file, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sinha with the conventional art stated in Pinkoski, such that the

nodes are inodes. The motivation would have been to optimize file access, as taught by Sinha (col. 2, ll. 1, l. 54 – col. 2, l. 65, col. 7, ll. 17-68), on a system with inodes.

Claims 8 and 15 are rejected because they claim the same invention as method claim 1, in the form of a computer program or system.

As to claim 14, Sinha, as modified by Pinkoski, further teaches wherein a pathname of a file system object and its cross-referenced inode number is removed from the memory system when a user so ordered (col. 8, ll. 1-39). Note that the user is requesting (ordering) that the file be no longer accessed using a particular access mode.

As to claim 18, Sinha, as modified by Pinkoski, further teaches obtaining a pathname from a user (col. 7, ll. 40-52). Note that when the user requests access to a file, the pathname for the file has to be obtained to locate the file. Therefore, Sinha at least indirectly obtains a file and pathname from a user.

As to claim 20, the combination of Sinha and Pinkoski do not expressly teach wherein a pathname of a file system object and its cross-referenced inode number are removed from the memory system when the file system containing the file system object is unmounted.

However, it has been held that the omission of an element and its function is obvious if the function of the element is not desired. *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989). In this case, the omission (removal) of cached paths of the mounted file system as described above is obvious when the function of the cached paths is not desired. Unmounting the system can cause the cached paths to not be

desired, because unmounting causes the mounted parts of the file system to be removed from the rest of the file system (opposite of mounting), and thus the cached mounted paths would contain references to data that no longer exist in the file system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sinha, and Pinkoski with the above teachings, such that the file system object (path) and cross referenced inode number is removed (from the cache memory) when the corresponding file system is unmounted. The motivation, as known to one of ordinary skill in the art, would have been to save memory in the cache taught by Sinha (see fig. 3, 4A), since the cache may have otherwise been occupied by invalid data.

Claims 11 and 13 are rejected because they are drawn to computer programs claiming the same invention as system claims 18 and 20.

10. Claims 2, 4, 6, 7, 9, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha (U.S. Patent 5,437,029) in view of Pinkoski (U.S. Patent 5,742,817) further in view of Achiwa et al (Pub. No. 2003/0110190).

As to claim 2, Sinha as modified by Pinkoski teaches entering a pathname containing the file system object into the memory system, as described above.

Sinha and Pinkoski do not expressly teach, "When a file system is mounted onto the system."

However, Achiwa shows that when a file system is mounted, the path(s) of the mounted file system become(s) accessible (see fig. 7, para. 0073). Sinha and Pinkoski as combined teach caching frequently used paths of a file system, as discussed above.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sinha and Pinkoski with the above teachings, such that when another file system is mounted, the path(s) of frequently used file objects of the mounted system can be cached. Hence, a pathname of a frequently accessed file system object would be entered into the memory system (cache). The motivation would have been to increase file access performance, as taught by Sinha (col. 7, ll. 17-68), on files that are mounted (Achiwa, fig. 7).

As to claim 4, Sinha, as modified by Pinkoski and Achiwa, further teaches wherein the determining step includes the step of obtaining a pathname from a user (col. 7, ll. 40-52). Note that when the user requests access to a file, the pathname for the file has to be obtained to locate the file. Therefore, Sinha at least indirectly obtains a file and pathname from a user.

As to claim 6, the combination of Sinha, Pinkoski, and Achiwa do not expressly teach wherein a pathname of a file system object and its cross-referenced inode number are removed from the memory system when the file system containing the file system object is unmounted.

However, the combination as described above teaches caching pathnames of mounted file systems.

Additionally, it has been held that the omission of an element and its function is obvious if the function of the element is not desired. *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989). In this case, the omission (removal) of cached paths of the mounted file system as described above is obvious when the function of the cached

paths is not desired. Unmounting the system can cause the cached paths to not be desired, because unmounting causes the mounted parts of the file system to be removed from the rest of the file system (opposite of mounting), and thus the cached mounted paths would contain references to data that no longer exist in the file system (see fig. 7 of Achiwa but picture the mounted portion(s) being unmounted).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sinha, Pinkoski, and Achiwa with the above teachings, such that the file system object (path) and cross referenced inode number is removed (from the cache memory) when the corresponding file system is unmounted. The motivation, as known to one of ordinary skill in the art, would have been to save memory in the cache taught by Sinha (see fig. 3, 4A), since the cache may have otherwise been occupied by invalid data.

As to claim 7, Sinha, as modified by Pinkoski and Achiwa, further teaches wherein a pathname of a file system object and its cross-referenced inode number is removed from the memory system when a user so ordered (col. 8, ll. 1-39). Note that the user is requesting (ordering) that the file be no longer accessed using a particular access mode.

Claims 9 and 16 are rejected because they are drawn to a program and system claiming the same invention as method claim 2.

11. Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha (U.S. Patent 5,437,029) in view of Pinkoski (U.S. Patent

5,742,817) further in view of Nevarez (U.S. Patent 5,499,358), further in view of Bauer (U.S. Patent 5,388,257).

As to claim 17, Sinha and Pinkoski do not expressly teach obtaining from an extended attribute file a list of path names, the extended attribute file being associated with a mounted file system.

However, Nevarez teaches in a file system, obtaining from an extended attribute file a list of files and directories (e.g., all files and directories matching a tag "word processing" from using the extended attribute file, col. 4, ll. 54-64). Bauer teaches that files are named by path names (col. 4, ll. 18-23). File systems are conventionally mounted, as known to one of ordinary skill in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Sinha and Pinkoski with the above teachings, such that "obtaining from an extended attribute file a list of path names" is implemented, and the mounted file system has an extended attribute file. The motivation would have been to specify a path to the files that match a search condition of Nevarez (col. 4, ll. 57-63), since the path is important to access a file in a file system, as known to one of ordinary skill in the art. The teachings of Nevarez would also be helpful for a mounted file system because the extended attributes facilitate managing, maintaining, and controlling file systems (col. 1, ll. 65-67).

Sinha, Pinkoski, Nevarez, and Bauer do not expressly teach "a list of pathnames to be entered into the memory system."

However, in the combination, Sinha would cache frequently used path names, as seen in fig. 3 and 4B. Certain path names, corresponding to the “word processing” and “spreadsheet” type, as taught by Nevarez in combination with Bauer above, can be frequently accessed, depending on the user’s requirement (Sinha, col. 7, ll. 40-52). Finally, the returned results of Nevarez and Bauer can be a list of names, because search results are conventionally a list of results.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Sinha, Pinkoski, Nevarez, and Bauer with the above teachings, such that the returned list of pathnames of Nevarez and Bauer would correspond to frequently accessed path names as defined by the user, and thus would be entered into the memory system (cache) of Sinha. The motivation would have been to increase file access performance (Sinha, col. 2, ll. 1, l. 54 – col. 2, l. 65, col. 7, ll. 17-68) for all files of a certain type (Nevarez, col. 4, ll. 55-64).

Claim 10 is rejected because it is drawn to a computer program claiming the same invention as system claim 17.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha (U.S. Patent 5,437,029) in view of Pinkoski (U.S. Patent 5,742,817) further in view of Achiwa et al (Pub. No. 2003/0110190), further in view of Nevarez (U.S. Patent 5,499,358), further in view of Bauer (U.S. Patent 5,388,257).

As to claim 3, Sinha, Pinkoski, and Achiwa do not expressly teach obtaining from an extended attribute file a list of path names, the extended attribute file being associated with the mounted file system.

However, Nevarez teaches in a file system, obtaining from an extended attribute file a list of files and directories (e.g., all files and directories matching a tag “word processing” from using the extended attribute file, col. 4, ll. 54-64). Bauer teaches that files are named by path names (col. 4, ll. 18-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Sinha, Pinkoski, and Achiwa with the above teachings, such that “obtaining from an extended attribute file a list of path names” is implemented, and the mounted file system has an extended attribute file. The motivation would have been to specify a path to the files that match a search condition of Nevarez (col. 4, ll. 57-63), since the path is important to access a file in a file system, as known to one of ordinary skill in the art. The teachings of Nevarez would also be helpful for the mounted file system taught by Achiwa because the extended attributes facilitate managing, maintaining, and controlling file systems (col. 1, ll. 65-67).

Sinha, Pinkoski, Achiwa, Nevarez, and Bauer do not expressly teach “a list of pathnames to be entered into the memory system.”

However, in the combination, Sinha would cache frequently used path names, as seen in fig. 3 and 4B. Certain path names, corresponding to the “word processing” and “spreadsheet” type, as taught by Nevarez in combination with Bauer above, can be frequently accessed, depending on the user’s requirement (Sinha, col. 7, ll. 40-52). Finally, the returned results of Nevarez and Bauer can be a list of names, because search results are conventionally a list of results.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Sinha, Pinkoski, Achiwa, Nevarez, and Bauer with the above teachings, such that the returned list of pathnames of Nevarez and Bauer would correspond to frequently accessed path names as defined by the user, and thus would be entered into the memory system (cache) of Sinha. The motivation would have been to increase file access performance (Sinha, col. 2, ll. 1, l. 54 – col. 2, l. 65, col. 7, ll. 17-68) for all files of a certain type (Nevarez, col. 4, ll. 55-64).

13. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha (U.S. Patent 5,437,029) in view of Pinkoski (U.S. Patent 5,742,817) further in view of Falkner (U.S. Patent 5,713,008).

As to claim 19, Sinha and Pinkoski do not expressly teach wherein code data is processed to monitor accesses to a file system object within a certain time span.

However, Falkner teaches monitoring accesses to a file system object within a certain time span (col. 6, ll. 10-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sinha, and Pinkoski with the above teachings, such that determining includes monitoring accesses to a file system object within a certain time span. The motivation would have been to estimate a file cache size to be stored on the client computer, as taught by Falkner (col. 1, l. 65 – col. 2, l. 10). This would be advantageous for the “type 2” access of Sinha, because in this mode, the files are cached on the client system (Sinha, col. 8, l. 67 – col. 9, l. 16).

Claim 12 is rejected because it is drawn to a computer program claiming the same invention as system claim 19.

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha (U.S. Patent 5,437,029) in view of Pinkoski (U.S. Patent 5,742,817) further in view of Achiwa et al (Pub. No. 2003/0110190) further in view of Falkner (U.S. Patent 5,713,008).

As to claim 5, Sinha, Pinkoski, and Achiwa do not expressly teach wherein determining includes monitoring accesses to a file system object within a certain time span.

However, Falkner teaches monitoring accesses to a file system object within a certain time span (col. 6, ll. 10-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sinha, Pinkoski, and Achiwa with the above teachings, such that determining includes monitoring accesses to a file system object within a certain time span. The motivation would have been to estimate a file cache size to be stored on the client computer, as taught by Falkner (col. 1, l. 65 – col. 2, l. 10). This would be advantageous for the “type 2” access of Sinha, because in this mode, the files are cached on the client system (Sinha, col. 8, l. 67 – col. 9, l. 16).

Conclusion

15. The following prior art cited on the PTO-892 form, not relied upon, is considered pertinent to applicant's disclosure:

Rao, Chung-Hwa. U.S. Patent 6,078,929 discloses an Internet file system.

Irwin, Jr. et al. U.S. Patent 5,566,331 discloses a mass storage system for file systems.

Atsatt et al. U.S. Patent 5,504,892 discloses an extensible object oriented file system.

Mutalik et al. U.S. Patent 6,029,166 discloses a system and method for generating an operating system independent file map.

Kain, III et al. U.S. Patent 6,119,118 discloses a method and system for extending file system metadata.

Soltis, Steven. U.S. Patent 6,697,846 discloses a shared file system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Lu whose telephone number is (571) 272-8594. The examiner can normally be reached on 8:30 - 5:00; M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CL
Assistant Examiner
AU 2163
2/15/2006


UYEN LE
PRIMARY EXAMINER